WTCI-30-P

THE PORT AUTHORITY OF NY & NJ

TRANSMITTAL

To: WTC Technical Information Repository
National Institute of Standards and Technology
100 Bureaue Drive, Stop 8610
Gaithersburg, MD 20899-8610

Date: 1/21/03

Attention: Dr. S. Shyam Sunder

Subject: WTC 1 and 2 Documents

☒ Herewith
☐ Under Separate Cover
} We are transmitting the documents listed below
☒ At Your Request
☒ For Your Information and Use

Construction Audit Material Testing Reports, as per Stephen A. Cauffman's request. Please see the attached list and the Remarks on this Transmittal

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Transmitted Via:

☐ Messenger

☐ Mail

☒ UPS ☐ FEDEX ☐ Other:

REMARKS:

*The testing reports for the projects in bold on the attached list are not available

*A search is being done for the items with the suffix "a (Information as given by Tom Lynch and Joanne Ciccolello" on the attached list. These items , if available, will be transmitted later.

Sent by: Saroj Bhol

PANYNJ Construction Audit Reports (Fireproofing 1-1/2 Thick)

Construction by PA and Tenants

List of Construction Audit Reports Requested by NIST

Priority	Contract/ TAA No.	Work Order No.	Tower/ Floor	Description
*	WTC 697.00	8934	1, 79 fl	Multiple tenant floor, Material Testing Report 11/24/1999
*	**WTC 697.00**	**4691**	**1, 80 fl**	**Multiple tenant floor**
*	WTC 697.00	4676	1, 81 fl	Multiple tenant floor, Material Testing Report 7/16/1999
*	WTC 697.00	4532	1, 81 fl	Multiple tenant floor, Material Testing Report 10/24/1996
*	W991169	–	1, 83 fl	Suite 8331, Material Testing Report 12/15/99
*	WTC 697.00	8918	1, 85 fl	Suite 8563, Material Testing Report 8/16/1999
*	WTC 697.00	8886	1, 85 fl	Multiple tenant floor, Material Testing Report 6/12/1999
*	WTC 697.00	4585	1, 85 fl	Multiple tenant floor, Material Testing Report 12/24/1997
*	**W991206.02**	–	**1, 86 fl**	**7000, SF, Julien Studley Inc., Material Testing Report 4/3/2000**
*	WTC 697.00	4550	1, 92 fl	Full floor, Material Testing Report 4/2/1997
*	WTC 697.00	4615	1, 93 fl	Full floor, Marsh and McLennan, Material Testing Report 8/28/1998
*	WTC 697.00	4540	1, 94 fl	Full floor, Marsh and McLennan, Material Testing Report 12/27/1996
*	WTC 697.00	4601	1, 95 fl	Full floor, Marsh and McLennan, Material Testing Report 8/24/1998
*	WTC 697.00	4626	1, 96 fl	Full floor, Marsh and McLennan, Material Testing Report 10/22/1998
*	WTC 697.00	4652	1, 97 fl	Full floor, Marsh and McLennan, Material Testing Report 10/22/1998
*	WTC 697.00	4632	1, 98 fl	Full floor, Marsh and McLennan, Material Testing Report 11/19/1998
*	WTC 697.00	4652	1, 99 fl	Full floor, Marsh and McLennan, Material Testing Report 11/20/1998
*	WTC 697.00	4626	1, 100 fl	Full floor, Marsh and McLennan, Material Testing Report 11/20/98
*	WTC 679.00	4682	1, 102 fl	Full floor, Material Testing Report 9/28/1999
*	WTC 679.00	4596	2, 77 fl	Full floor, Material Testing Report 6/9/1998
*	WTC 679.00	4596	2, 78 fl	Full floor, Material Testing Report 4/3/1998
*	WTC 679.00	4675	2, 88 fl	Full floor, Material Testing Report 6/23/2000
*	WTC 679.00	4667	2, 89 fl	Full floor, Material Testing Report 5/5/1999
*	WTC 679.00	4592	2, 92 fl	Full floor, Material Testing Report 2/26/1998

PANYNJ Construction Audit Reports (Fireproofing 1-1/2 Thick)

Construction by PA and Tenants

Priority	Contract/ TAA No.	Work Order No.	Tower/ Floor	Description
*	**WTC 697.00**	**4697**	**2, 96 fl**	**Full floor**
*	**WTC 697.00**	**4390**	**2, 97 fl**	**Full floor**
*	**WTC 697.00**	**4632**	**2, 98 fl**	
*	WTC 697.00	4592	2, 99 fl	Half floor, Material Testing Report 4/3/1998[a]
*	WTC 697.00	4569	2, 99 fl	Half floor, Material Testing Report 7/28/1997[a]
*	–	–	**1, 77 fl**	**Approximately 10,000 rsf, 1996[a]**
*	–	–	**1, 78 fl**	**Approximately 30,000 rsf, 1996[a]**
*	–	–	**1, 81 fl**	**Approximately 33,000 rsf, 2001[a]**
*	–	–	**1, 83 fl**	**Possible 12,111 rsf, Suite 8327, 1998[a]**
*	–	–	**1, 85 fl**	**Approximately 30,000 rsf, Suite 8513, 1998[a]**
*	–	–	**2, 86 fl**	**Installed by PA for NYS Dept. of Tax and Finance and WMB Holdings[a]**
*	–	–	**2, 87 fl**	**Installed by PA for NYS Dept. of Tax and Finance and WMB Holdings[a]**
*	–	–	**2, 93 fl**	**By Regus, 2001[a]**
*	–	–	**2, 95 fl**	**Approximately 25,000 rsf by Fiduciary Trust, 2001[a]**

a. Information as given by Tom Lynch and Joanne Ciccolello on 1/31/02.

rec'd 1.22.03

WTCI-30-P

THE PORT AUTHORITY OF NY & NJ

TRANSMITTAL

To: **WTC Technical Information Repository**
National Institute of Standards and Technology
100 Bureau Drive, Stop 8610
Gaithersburg, MD 20899-8610

Date: **1/29/03**

Attention: **Dr. S. Shyam Sunder**

Subject: **WTC 1 and 2 Documents**

☒ Herewith
☐ Under Separate Cover
} We are transmitting the documents listed below
☒ At Your Request
☒ For Your Information and Use

Construction Audit Material Testing Reports:
W.O. 4626, 1/96 fl, October 22, 1998
W.O. 4652, 1/97 fl, October 22, 1998
W.O. 4652, 1/99 fl, November 20, 1998
W.O. 4626, 1/100 fl, November 20, 1998
W.O. 4667, 2/89 fl, May 5, 1999
W.O. 4592, 2/99 fl, April 3, 1998
W.O. 4569, 2/99 fl, July 28, 1997

Transmitted Via:

☐ Messenger

☐ Mail

☒ UPS ☐ FEDEX ☐ Other:

REMARKS:

Missing pages of material transmitted on 1/21/03, as requsted by S. Cauffman(via 1/24/03 e.mail to S. Bhol)

Sent by: Saroj Bhol

THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: John Bullard
DATE: December 27, 1996
SUBJECT: World Trade Center: Test of Fire Resistive Material
WTC - 697.00 - W.O. 4540
COPY TO: C. Bognacki, T. O'Connor, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 94th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

Location:	Density Lbs./Cu. Ft.	Adhesion\ Cohesion Lb./Sq.Ft.	Thickness Inches
Minimum Requirements	*16.00*	*150*	*1.50*
TEST AREA #1 WTC 94th Floor East Beam by column 329 Bottom of truss	21.24	486	4.28
TEST AREA #2 WTC 94th Floor North Beam by column 233 Bottom of truss	20.53	504	3.80
TEST AREA #3 WTC 94th Floor West Beam by column 131 Top of truss	20.06	288	4.33

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II is within Port Authority Specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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WTCI-30-P

THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

W.O. # 4615

TO: Eli Moscovitz
FROM: John Bullard
DATE: August 28, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge # W2-084-099-105-349-12
COPY TO: C. Bognacki, T. O'Connor, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 93rd floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Date	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements		***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 93rd Floor South 337 Bottom of truss	7/30/98 8/17/98	14.25 16.63	117 153 207	1.80 1.95
TEST AREA #2 1WTC 93rd Floor East 233 Bottom of truss	7/30/98	16.12	216	1.84
TEST AREA #3 1 WTC 93rd Floor North 137 Bottom of truss	7/30/98	18.42	234	2.25

[Continued]

[Continued]

	Date	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements		***15.00***	***150***	***1.50***
TEST AREA #4 1WTC 93rd Floor South 335 Bottom of truss	8/6/98	15.10	162	1.80
TEST AREA #5 1WTC 93rd Floor East 239 Bottom of truss	8/6/98	17.36	180	1.89
TEST AREA #6 1 WTC 93rd Floor West 435 Bottom of truss	8/6/98	21.32	216	2.92

The South 337 truss fireproofing was originally inspected on July 30, 1998 and found to be deficient. On August 20, 1998, a re-inspection of the same truss was performed and found to be acceptable. Results from five additional trusses inspected on the 93rd floor indicate that the applied fireproofing material, CAFCO Blaze-Shield II, meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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THE PORT AUTHORITY OF NY AND NJ
MEMORANDUM

TO: Eli Moscovitz
FROM: John Bullard
DATE: December 24, 1997
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.000 Charge No. W2 - 105.207
COPY TO: C. Bognacki, E. McGinley, T. O'Connor, A. Serpe, M. Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO - Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 85TH floor of WTC #1 .

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

LOCATION:	Density lbs./cu.ft.	Adhesion/Cohesion lbs./sq.ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 85th Fl. 9th Truss from West wall	28.67	162	3.50
TEST AREA #2 85th Fl. 5th Truss from East wall	23.73	180	2.92
TEST AREA #3 85th Fl 5th Truss from N-E wall	18.59	288	2.92

The test results indicate that the applied fireproof material, CAFCO - Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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PRMIT 5/23/00

WTCI-30-P

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: December 15, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - TAA #991169
COPY TO: C. Bognacki, J. Bullard, P. Ortiz, J. Shanahan, M.Young, E.F.

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied in Suite 8331, on the 83rd Floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1 WTC, Suite 8331, 83rd Fl. Truss 341 North Bottom of truss	16.04	259	2.19

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

W.O. # 4550

TO: Eli Moscovitz
FROM: John Bullard
DATE: April 2, 1997
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00
COPY TO: C. Bognacki, E. McGinley, T. O'Connor, A. Serpe, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 92nd floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

Location:	Density Lbs./Cu. Ft.	Adhesion\ Cohesion Lb./Sq.Ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 WTC 92nd Floor South Beam by column 331 Bottom of truss	20.33	360	3.05
TEST AREA #2 WTC 92nd Floor East Beam by column 249 Bottom of truss	15.41	324	2.83
TEST AREA #3 WTC 92nd Floor West Beam by column 411 Bottom of truss	18.01	360	2.78

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

RECEIVED
99 JUL 21 A8:01
WORLD TRADE CENTER

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: July 16, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #4676 Charge #W02-857.090
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M.Young, P. Ortiz, E.F.

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 81st floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 81st Floor Truss 349 South Bottom of truss	17.36	352	2.28
TEST AREA #2 1WTC 81st Floor Truss 107 North Bottom of truss	17.64	463	2.38
TEST AREA #3 1WTC 81st Floor Truss 233 East Bottom of truss	17.41	315	3.00

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: John Bullard
DATE: October 24, 1996
SUBJECT: World Trade Center: Test of Fire Resistive Material
WTC - 697.00 - W.O. #4532
COPY TO: C. Bognacki,A. Serpe, M. Young,
T. O'Connor, Eng. Files

As requested, the Materials Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 81st floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

Location:	Density Lbs./Cu. Ft.	Adhesion\ Cohesion Lb./Sq.Ft.	Thickness Inches
Port Authority Specs. Min.	*16.00*	*150*	*1.50*
TEST AREA #1 WTC 81st Floor South Bottom of truss	19.04	270	2.69

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II is within Port Authority Specifications. Therefore the Materials Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: August 16, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #8918 Charge #W02-105.000
COPY TO: C. Bognacki, J. Bullard, A. Serpe, J. Shanahan, M.Young, E.F.

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 85th floor, suite 8563, of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 85th Floor Suite 8563 Truss 119 North Bottom of truss	16.45	259	2.78

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: June 12, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #8886 Charge #W2-105.492
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 85th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 85th Floor Truss 135 South Bottom of truss	15.78	278	2.86

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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WTCI-30-P

W.O. # 4626

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: October 22, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC-697.00 Charge #W2-105.405
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority Specifications. The material was applied at the 96th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

Location:	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	[illegible]	[illegible]	[illegible]
TEST AREA #1 WTC 96th Floor Beam 239 East Bottom of truss	20.52	486	3.03
TEST AREA #2 WTC 96th Floor Beam 143 North Bottom of truss	19.83	288	3.16

(Continued)

W.O. # 4626

(Continued)

Location:	Density lb./cu. Ft.	Cohesion lb./sq. ft.	Thickness Inches
TEST AREA #3 WTC 96th Floor Beam 439 West Bottom of truss	19.90	324	3.16

The test results indicate that the applied fireproof material, Cafco Blaze-Shield II, meets Port Authority specifications. Therefore the Materials Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Senior Chemist

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WTCI-30-P

W.O # 4652

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: October 22, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC-697.00 Charge #W2-105.405
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority Specifications. The material was applied at the 97th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

Location:	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements			
TEST AREA #1 WTC 97th Floor Beam 331 South Bottom of truss	26.51	360	2.64
TEST AREA #2 WTC 97th Floor Beam 241 East Bottom of truss	20.02	468	2.17

(Continued)

W.O. # 4652

(Continued)

Location:	Density lb./cu. Ft.	Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements			
TEST AREA #3 WTC 97th Floor Beam 143 North Bottom of truss	23.86	468	2.22

The test results indicate that the applied fireproof material, Cafco Blaze-Shield II, meets Port Authority specifications. Therefore the Materials Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Senior Chemist

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: John Bullard
DATE: November 19, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge # W2-084-099-105-405-12
COPY TO: C. Bognacki, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 98th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 98th Floor North 113 Bottom of truss	31.34	407	2.91
TEST AREA #2 1WTC 98th Floor East 232 Bottom of truss	16.79	351	2.83

[Continued]

[Continued]

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #3 1 WTC 98th Floor South 325 Bottom of truss	19.65	518	2.52

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II, meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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WTCI-30-P

W.O. # 4652

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: November 20, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge #W2-105.405
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 99th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 99th Floor Truss 427 West Bottom of truss	18.79	204	2.84
TEST AREA #2 1WTC 99th Floor Truss 339 South Bottom of truss	16.60	222	2.22

[Continued]

[Continued]

TEST AREA #3 1WTC 99th Floor Truss 229 East Bottom of truss	18.38	204	2.23

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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WTCI-30-P

W.O. # 4626

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: November 20, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge #W2-105.405
COPY TO: C. Bognacki, J. Bullard, J. Shanahan, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 100th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	*15.00*	*150*	*1.50*
TEST AREA #1 1WTC 100th Floor Truss 433 West Bottom of truss	16.45	278	2.80
TEST AREA #2 1WTC 100th Floor Truss 337 South Bottom of truss	17.27	278	3.17

[Continued]

W.O. #4626

[Continued]

TEST AREA #3 1WTC 100th Floor Truss 153 North Bottom of truss	19.90	333	3.38

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

AZ
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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

D.-#1 4601

TO: Eli Moscovitz
FROM: John Bullard
DATE: August 24, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge # W2-084-099-105-324-12
COPY TO: C. Bognacki, R. Levine, T. O'Connor, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 95th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 95th Floor South 329 Bottom of truss	17.96	270	2.16
TEST AREA #2 1WTC 95th Floor East 235 Bottom of truss	20.09	306	2.41
TEST AREA #3 1 WTC 95th Floor West 429 Bottom of truss	20.42	198	3.30

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II, meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

JT
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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: Dorian Bailey
DATE: September 28, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #4682 Charge #W02-857090
COPY TO: C. Bognacki, J. Bullard, P. Ortiz, J. Shanahan, M.Young, E.F.

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 102nd floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 102nd Floor Truss 131 North Bottom of truss	16.47	333	3.25
TEST AREA #2 1WTC 102nd Floor Truss 231 East Bottom of truss	16.87	333	3.25
TEST AREA #3 1WTC 102nd Floor Truss 313 South Bottom of truss	15.93	315	2.11

{Continued}

{Continued}

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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4596

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

98 JUN 12 AM : 34

TO: Eli Moscovitz
FROM: John Bullard
DATE: June 9, 1998
SUBJECT: World Trade Center Test of Fire Resistive Material
Contract WTC - 697 00 Charge #W084-105.265
COPY TO: C. Bognacki, T. O'Connor, A. Serpe, J. Shanahan, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 77th floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 77th Floor East 121 Bottom of truss	19.39	351	2.67
TEST AREA #2 2WTC 77th Floor West 353 Bottom of truss	19.35	198	2.11
TEST AREA #3 2WTC 77th Floor West 303 Bottom of truss	17.24	297	2.60

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

JT
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WTCI-30-P

THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Edward McGinley
FROM: Dorian Bailey
DATE: November 24, 1999
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #8934 Charge #W02-600.216
COPY TO: C. Bognacki, J. Bullard, P. Ortiz, J. Shanahan, M.Young, E.F.

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 79th floor of WTC #1.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 1WTC 79th Floor Truss 433 West Bottom of truss	16.64	333	2.36

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

Anita

WO#4596

TO: Eli Moscovitz
FROM: John Bullard
DATE: April 3, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge #W2-105.256
COPY TO: C. Bognacki, E. McGinley, T. O'Connor, A. Serpe, J. Shanahan, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 78th floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 78th Floor East 327 Bottom of truss	17.00	288	2.50
TEST AREA #2 2WTC 78th Floor West 157 Bottom of truss	18.10	270	2.75

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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WTCI-30-P

THE PORT AUTHORITY OF NY & NJ

MATERIALS ENGINEERING DIVISION

MEMORANDUM

To: Eli Moscovitz 05-Jul-00

From: Dorian Bailey

Re: WTC: Test of Fire Resistive Material at 2 WTC/88th Floor, Contract WTC -697.00, Charge Code W02-115.925 W.O. #4675

cc: J. Bullard, C. Bognacki, A. Serpe, J. Shanahan, M. Young, EF

As requested, the Materials Engineering Division has tested the application of sprayed-on fireproofing, CAFCO Blaze Shield II, for conformance to Port Authority Specifications. Testing was performed on 6/23/00, in accordance with ASTM E-605, "Thickness and Density," and ASTM E-736, "Adhesion/Cohesion of Sprayed Fire Resistive Materials Applied to Structural Steel Members."

The results are as follows:

Sample No.	Sample Description	Density, lb/ft3	Adhesion/ Cohesion, lb/ft2	Thickness, Inches
	Minimum Requirements:	*15*	*150*	*1.50*
E8067	Beam 213 North	18	167	1.89
E8068	Beam 157 West	16	333	2.36
E8069	Beam 315 East	15	157	2.13

The results indicate that the applied low density fireproof material meets PA specifications.

Please feel free to contact me on (201) 216-2963 if there are any questions concerning these results.

WTC1-30-P

W.O. # 4667

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO:	Eli Moscovitz
FROM:	Dorian Bailey
DATE:	May 5, 1999
SUBJECT:	World Trade Center: Test of Fire Resistive Material Contract WTC - 697.00 - W.O. #4667 - Charge #W2-105.508
COPY TO:	C. Bognacki, J. Bullard, J. Shanahan, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 89th floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 89th Floor Truss 329 East Bottom of truss	22.42	370	2.80
TEST AREA #2 2WTC 89th Floor Truss 231 North Bottom of truss	15.75	333	2.70

[Continued]

W.O. # 4667

[Continued]

TEST AREA #3 2WTC 89th Floor Truss 127 West Bottom of truss	15.34	270	2.95

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

Dorian Bailey
Staff Services Engineer

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WTCI-30-P

THE PORT AUTHORITY OF NY AND NJ **MEMORANDUM**

TO: Eli Moscovitz
FROM: John Bullard
DATE: February 26, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 W.O. #4592 Charge #W2-105.256
COPY TO: C. Bognacki, T. O'Connor, A. Serpe, J. Shanahan, M. Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 92nd floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion / Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 92nd Floor Truss 335 East Bottom of truss	19.70	342	2.83
TEST AREA #2 2WTC 92nd Floor Truss 421 South Bottom of truss	21.09	360	3.00
TEST AREA #3 2WTC 92nd Floor Truss 127 West Bottom of truss	19.73	297	2.67

[Continued]

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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WTCI-30-P W.O. # 4569

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: John Bullard
DATE: July 28, 1997
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge #W2-105.256
COPY TO: C. Bognacki, E. McGinley, T. O'Connor, A. Serpe, M.Young, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 99th floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion\ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 99th Floor West 43 Bottom of truss	19.53	315	2.10
TEST AREA #2 2WTC 99th Floor West 9 Bottom of truss	22.71	252	3.05

[Continued]

W.O. # 4569

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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WTCI-30-P

W.O. # 4592

THE PORT AUTHORITY OF NY AND NJ MEMORANDUM

TO: Eli Moscovitz
FROM: John Bullard
DATE: April 3, 1998
SUBJECT: World Trade Center: Test of Fire Resistive Material
Contract WTC - 697.00 Charge #W2-105.256
COPY TO: C. Bognacki, E. McGinley, T. O'Connor, A. Serpe, J. Shanahan, Eng. Files

As requested, the Materials Engineering Division has tested the application of the sprayed-on fireproofing, CAFCO Blaze-Shield II for conformance to Port Authority specifications. The material was applied at the 99th floor of WTC #2.

The tests were performed in accordance with ASTM E-605, "Thickness and Density" and ASTM E-736 "Adhesion/Cohesion" of Sprayed Fire Resistive Materials Applied to Structural Steel Members".

The results are as follows:

	Density lb./cu. ft.	Adhesion/ Cohesion lb./sq. ft.	Thickness Inches
Minimum Requirements	***15.00***	***150***	***1.50***
TEST AREA #1 2WTC 99th Floor North 243 Bottom of truss	21.88	306	1.80
TEST AREA #2 2WTC 99th Floor East 349 Bottom of truss	19.48	270	1.73

[Continued]

W.O. # 4592

[Continued]

The test results indicate that the applied fireproof material, CAFCO Blaze-Shield II meets Port Authority specifications. Therefore the Materials Engineering Division recommends the acceptance of the fireproofing material.

John Bullard
Chief of Chemical/
Environmental Testing

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Tower	Floor No.	Specific Location/Square Footage/Tenant	Contract/TAA No.	Applicable Work Order No.	Material Testing Report
1	79	Multiple tenant floor	WTC-697.00	8934	11/24/1999
1	80	Multiple tenant floor	WTC-697.00	4691	?
1	81	Multiple tenant floor	WTC-697.00	4676	07/16/1999
1	81	Multiple tenant floor	WTC-697.00	4532	10/24/1996
1	83	Suite 8331	W-991169		12/15/1999
1	85	Suite 8563	WTC-697.00	8918	08/16/1999
1	85	Multiple tenant floor	WTC-697.00	8886	06/12/1999
1	85	Multiple tenant floor	WTC-697.00	4585	12/24/1997
1	86	7000, SF, Julien Studley Inc.	W-991206.02		04/03/2000
1	92	Full Floor	WTC-697.00	4550	04/02/1997
1	93	Full Floor, Marsh and McLennan	WTC-697.00	4615	08/28/1998
1	94	Full Floor, Marsh and McLennan	WTC-697.00	4540	12/27/1996
1	95	Full Floor, Marsh and McLennan	WTC-697.00	4601	08/24/1998
1	96	Full Floor, Marsh and McLennan	WTC-697.00	4626	10/22/1998
1	97	Full Floor, Marsh and McLennan	WTC-697.00	4652	10/22/1998
1	98	Full Floor, Marsh and McLennan	WTC-697.00	4632	11/19/1998
1	99	Full Floor, Marsh and McLennan	WTC-697.00	4652	11/20/1998
1	100	Full Floor, Marsh and McLennan	WTC-697.00	4 626	11/20/1998
1	102	Full Floor	WTC-679.00	4682	09/28/1999
2	77	Full Floor	WTC-697.00	4596	06/09/1998
2	78	Full Floor	WTC-697.00	4596	04/03/1998
2	88	Full Floor	WTC-697.00	4675	06/23/2000
2	89	Full Floor	WTC-697.00	4667	05/05/1999
2	92	Full Floor	WTC-697.00	4592	02/26/1998
2	96	Full Floor	WTC-697.00	4697	?
2	97	Full Floor	WTC-697.00	4390	?
2	98	?	WTC-697.00	4632	?
2	99	Half Floor	WTC-697.00	4592	04/03/1998
2	99	Half Floor	WTC-697.00	4569	07/28/1997

Monica said to request all of these. Cheri 1-6-03 The # indicate priority

from John Gross
AKA "Construction Audit Reports"

January 31, 2002

[redacted]

Cheri 12/10/02

roofing – 1 ½ thickness

	Floor No.	INFORMATION AS GIVEN BY TOM LYNCH AND JOANNE CICCOLELLO ON 1/31/02	YEAR COMPLETED OR PERFORMED		
1	77	Approximately 10, 000 rsf.	1996		
1	78	Approximately 30, 000 rsf	1996		
1	81	Approximately 33, 000 rsf	2001		
1	83	Possible 12,111 rsf, Suite 8327	1998		
1	85	Approximately 30, 000 rsf, Suite8513	1998		
2	86	Installed by PA for NYS Dept. of Tax and Finance and WMB Holdings	?		
2	87	Installed by PA for NYS Dept. of Tax and Finance and WMB Holdings	?		
2	93	By Regus	2001		
2	95	Approximately 25,000 rsf by Fiduciary Trust	2001		